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EXAMINER

KOCH, GEORGE R

ART UNIT PAPER NUMBER

1734

DATE MAILED: 11/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/893,316

Applicant(s)

REARDON ET AL.

Examiner

George R. Koch III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 54-104 is/are pending in the application.
- 4a) Of the above claim(s) 103 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 54-102 and 104 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/27/02 1449
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of claims 54-102 in the reply filed on 9/10/2004 is acknowledged. Newly submitted claim 104 has also been grouped with claims 54-102. Method claims 103 is not rejoined with newly proposed claim 104, since newly proposed claim 104 can be used to practice another and material different process, such as coating wood panels.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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4. Claims 54-63, 66-75, 78-86, 89-97, 100-102 and 104 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ringer (US Patent 4,590,094) in view of *either* of Karl (US Patent 4,651,440) *or* Thompson (US 5,156,174).

Note: independent claims 54, 69, 81, 82 and 104 are addressed first, followed by the dependent claims.

As to claim 54, Ringer discloses a wafer processor (figure 1) for processing a wafer such as a semiconductor wafer, a magnetic disk, or an optical disk, comprising: a processing bowl having an upper edge (item 12); and a processor head comprising a motor (item 15) and a wafer holder (item 10), the motor being carried above the wafer holder and operatively coupled to the wafer holder, the wafer holder being adapted to support a single wafer about a periphery of the wafer for rotation at a height below the upper edge of the processing bowl.

Ringer does not disclose that the processor head extends outwardly of the periphery of the wafer.

However, both Karl and Thompson discloses that the processor head extends outwardly of the periphery of the wafer (see Karl, Figure 1, item 125 and Thompson, Figure 4, items 40). Karl discloses that the expand processor head improves support of the wafer/substrate by avoiding the flaws of a vacuum grip (see column 1), while Thompson discloses that the expanded processor head is better suited for handling larger substrates (see column 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such expanded

process heads that extend outwardly of the wafer periphery in order to avoid the flaws of the vacuum grip and achieve better handling of larger wafers.

As to claim 69, Ringer discloses wafer processor (Figure 1) for processing a wafer such as a semiconductor wafer, a magnetic disk, or an optical disk, comprising: a processing bowl having an upper edge (item 12), and a processor head comprising an upper portion housing a motor (item 15), a rotatable wafer support (item 10) carried below the upper portion, a vertical shaft (visible in Figure 1) coupling the motor to the wafer support, and a mount carried by the upper portion, the wafer support being adapted to support a single wafer at a height below the upper edge of the processing bowl, the mount being adapted to facilitate the lifting of the processor head with respect to the processing bowl (see Figure 3).

However, Ringer does not disclose that the wafer support is adapted to overlay and peripherally support a single wafer.

However, both Karl and Thompson disclose that the wafer support is adapted to overlay and peripherally support a single wafer (see Karl, Figure 1, item 125 and Thompson, Figure 4, items 40). Karl discloses that the expand processor head improves support of the wafer/substrate by avoiding the flaws of a vacuum grip (see column 1), while Thompson discloses that the expanded processor head is better suited for handling larger substrates (see column 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such expanded

process heads that extend outwardly of the wafer periphery in order to avoid the flaws of the vacuum grip and achieve better handling of larger wafers.

As to claim 81, Ringer discloses a wafer processor (figure 1) for processing a wafer such as a semiconductor wafer, a magnetic disk, or an optical disk, comprising a processing bowl (item 12) having an upper edge; and a processor head comprising an upper portion, a motor (item 15) with the upper portion, and a wafer holder (item 10) extending downwardly from the upper portion, the motor being coupled to the wafer holder by a downwardly extending shaft (visible in Figure 1), the wafer holder being adapted to support a single wafer at a height below the upper edge of the processing bowl with the upper portion of the processor head extending outwardly of the periphery of the wafer.

Ringer does not disclose that the motor is enclosed within the upper portion or that the wafer holder is adapted to overlay and peripherally support the single wafer.

However, both Karl and Thompson disclose that the wafer support is adapted to overlay and peripherally support a single wafer (see Karl, Figure 1, item 125 and Thompson, Figure 4, items 40). Karl discloses that the expand processor head improves support of the wafer/substrate by avoiding the flaws of a vacuum grip (see column 1), while Thompson discloses that the expanded processor head is better suited for handling larger substrates (see column 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such expanded process heads that extend outwardly of the wafer periphery in order to avoid the flaws

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of the vacuum grip and achieve better handling of larger wafers. Furthermore, both Karl and Thompson disclose that the motor is enclosed (see item 34 in Thompson and item 128 in Karl). One in the art would immediately recognize that enclosing the motor protects the motor from the processing environment, which might utilize corrosive materials. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize an enclosed motor in order to protect the motor from the corrosive processing materials.

As to claim 92, Ringer discloses a wafer processor (figure 1) for processing a wafer such as a semiconductor wafer, a magnetic disk, or an optical disk, comprising a processing bowl having an upper edge; and a processor head comprising a motor (item 15) carried in an upper housing, a downwardly extending shaft (visible in Figure 1) coupled to the motor a wafer holder (item 10) coupled to and extending downwardly from the shaft, the wafer holder being adapted to support a single wafer for rotation by the motor at a height below the upper edge of the processing bowl.

Ringer does not disclose that the wafer holder is adapted overlay and peripherally the single wafer.

However, both Karl and Thompson disclose that the wafer support is adapted to overlay and peripherally support a single wafer (see Karl, Figure 1, item 125 and Thompson, Figure 4, items 40). Karl discloses that the expand processor head improves support of the wafer/substrate by avoiding the flaws of a vacuum grip (see column 1), while Thompson discloses that the expanded processor head is better suited

for handling larger substrates (see column 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such expanded process heads that extend outwardly of the wafer periphery in order to avoid the flaws of the vacuum grip and achieve better handling of larger wafers.

As to claim 104, Ringer discloses an apparatus (figure 1) for handling a wafer, comprising a processing head including a wafer support (item 10); a wafer processor comprising a processing bowl (item 12) and a processor head (item 12-16); means for positioning the wafer at a height below an upper edge of the processing bowl with the wafer support extending downwardly from a location positioned above the upper edge of the processing bowl (also item 10, and see Figure 3), means for rotating the wafer (item 15) at the height below the upper edge of the processing bowl; and means for lifting the processing head (see Figure 3).

Ringer does not disclose means for releasably engaging a periphery of a wafer with the wafer support, that the processing head extending outwardly of the periphery of the wafer.

However, both Karl and Thompson disclose that the wafer support is adapted to releasably engaging a periphery of a single wafer and that the processing head extending outwardly of the periphery of the wafer (see Karl, Figure 1, item 125 and Thompson, Figure 4, items 40). Karl discloses that the expand processor head improves support of the wafer/substrate by avoiding the flaws of a vacuum grip (see column 1), while Thompson discloses that the expanded processor head is better suited for handling larger substrates (see column 1). Therefore, it would have been obvious to



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one of ordinary skill in the art at the time of the invention to have utilized such expanded process heads that extend outwardly of the wafer periphery in order to avoid the flaws of the vacuum grip and achieve better handling of larger wafers.

As to claim 55, Ringer discloses that the processor head is adapted to be lifted with respect to the processing bowl (see Figure 3).

As to claims 56, 70, Ringer discloses that the wafer holder extends downwardly from an upper portion of the processor head to position a wafer below the upper portion of the processor head (see Figure 1).

As to claims 57, 71, 83 Ringer discloses that the processor head extends outwardly over the upper edge of the processing bowl (Figure 1). Furthermore, when combined with Karl and Thompson, the entire processing head extends outwardly of the entire periphery of the wafer.

As to claims 58, 72, and 94 Ringer discloses that the processor head extends outwardly over the upper edge of the processing bowl (Figure 1).

As to claim 59, Ringer discloses that the motor is carried by the upper portion of the processor head (see Figure 1).

As to claims 60, and 73 Ringer does not disclose that the motor is enclosed within the upper portion of the processor head. The motor appears to be exposed. However, both Karl and Thompson disclose that the motor is enclosed (see item 34 in Thompson and item 128 in Karl). One in the art would immediately recognize that

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enclosing the motor protects the motor from the processing environment, which might utilize corrosive materials. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize an enclosed motor in order to protect the motor from the corrosive processing materials.

As to claims 61, 74, 84 and 95 Ringer does not disclose annular gas recesses. However, Thompson discloses annular recesses as claimed (item 78, called an annular trough). Thompson discloses that these recesses serve to collect excess spray liquid (see column 7, lines 1-6). One in the art would appreciate that such recesses prevent damage to the substrate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize such a recess in order to reduce damage to the substrate.

As to claim 62, 75, 85 and 96, both Karl and Thompson as incorporated into Ringer disclose wafer support plates as the portion of the processing head that extends beyond the periphery (see Karl, figure 1, items 125 and Thompson, Figure 4, item 40).

As to claims 63, 86 and 97 Ringer, as modified by Karl or Thompson results in a processor head that extends outwardly beyond the wafer support plate.

As to claims 66, 78, 89 and 100, both Karl and Thompson as incorporated and cited above disclose wafer supports with a wafer support plate, and that the wafer support plate further has a downwardly directed front face and an upwardly directed back face.

As to claims 67, 79, 90, and 101, both Karl and Thompson as incorporated into Ringer disclose that the wafer support plate carries a plurality of fingers adapted to engage a peripheral edge of the wafer (Thompson, item 40, and Karl, item 125).

As to claims 68, 80, 91, and 102, both Karl and Thompson disclose that the fingers peripherally support the wafer (Thompson, item 40, and Karl, item 125).

As to claim 82 and 93, Ringer discloses that the processor head includes a mount adapted to facilitate lifting of the processor head (see Figure 3).

5. Claims 64, 65, 76, 77, 87, 88, 98 and 99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ringer and either of Karl or Thompson as applied to claim 54, 69 above, and further in view of Nakagiri.

Ringer, Karl and Thompson do not suggest acid resistant materials or that the acid resistant material is polyvinylidene fluoride.

However, Nakagiri discloses that polyvinylidene fluoride has acid resistant properties (column 4, line 19), in conjunction with use in semiconductor applications (see column 8-9). While Nakagiri is directed towards semiconductors, one in the art would immediately recognize that this material would also protect semiconductor processing structures, and improve apparatus durability. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize acid resistant materials such as polyvinylidene fluoride in order to improve apparatus durability.

### ***Double Patenting***

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6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 54-102 and 104 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-50 of U.S. Patent No. 6,375,741 in view of Ringer, Nakagiri, Karl and Thompson. The claims of US 6,375,741 claim substantially all of the critical limitations of the patent, such as the processing head, the wafer grippers. Ringer, Nakagiri, Karl and Thompson disclose all of the limitations of the claims (see 103 rejections above for citations). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the claims of US 6,375,741 with the cited references in order to achieve further functionality of the apparatus.

8. Claims 54-102 and 104 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 5,658,387 in view of Ringer, Nakagiri, Karl and Thompson. The claims of US 5,658,387 claim substantially all of the critical limitations of the patent, such as the processing head, the wafer grippers. Ringer, Nakagiri, Karl and Thompson disclose all

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of the limitations of the claims (see 103 rejections above for citations). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the claims of US 5,658,387 with the cited references in order to achieve further functionality of the apparatus.


9. Claims 54-102 and 104 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-44 of U.S. Patent No. 5,431,421 in view of Ringer, Nakagiri, Karl and Thompson. The claims of US 5,431,421 claim substantially all of the critical limitations of the patent, such as the processing head, the wafer grippers. Ringer, Nakagiri, Karl and Thompson disclose all of the limitations of the claims (see 103 rejections above for citations). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the claims of US 5,431,421 with the cited references in order to achieve further functionality of the apparatus.

10. Claims 54-102 and 104 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-44 of U.S. Patent No. 5,235,995 in view of Ringer, Nakagiri, Karl and Thompson. The claims of US 5,235,995 claim substantially all of the critical limitations of the patent, such as the processing head, the wafer grippers. Ringer, Nakagiri, Karl and Thompson disclose all of the limitations of the claims (see 103 rejections above for citations). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the claims of US 5,235,995 with the cited references in order to achieve further functionality of the apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George R. Koch III whose telephone number is (571) 272-1230 (TDD only). If the applicant cannot make a direct TDD-to-TDD call, the applicant can communicate by calling the Federal Relay Service at 1-866-377-8642 and giving the operator the above TDD number. The examiner can normally be reached on M-Th 10-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
George R. Koch III  
Patent Examiner  
Art Unit 1734

GRK  
11/14/2004